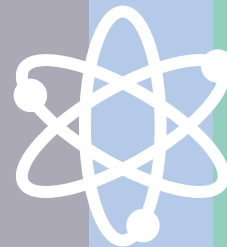




JRC Services

A Handbook for national, regional and local authorities
on why and how to engage with the European Commission's
science and knowledge service



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Who are we?

For about 60 years now, we have been acting as a science provider and knowledge broker. We contribute to ensuring that policy-makers have the best available evidence when taking important decisions that have an impact on EU citizens' daily lives, whether when preparing policies or implementing them.

Our research contributes to jobs and economic growth, a healthy and safe environment, secure energy supplies, sustainable mobility, consumer protection and safety and nuclear safeguards to name but a few areas.

We also play a key role in the development of standards that stimulate innovation and competitiveness in Europe.

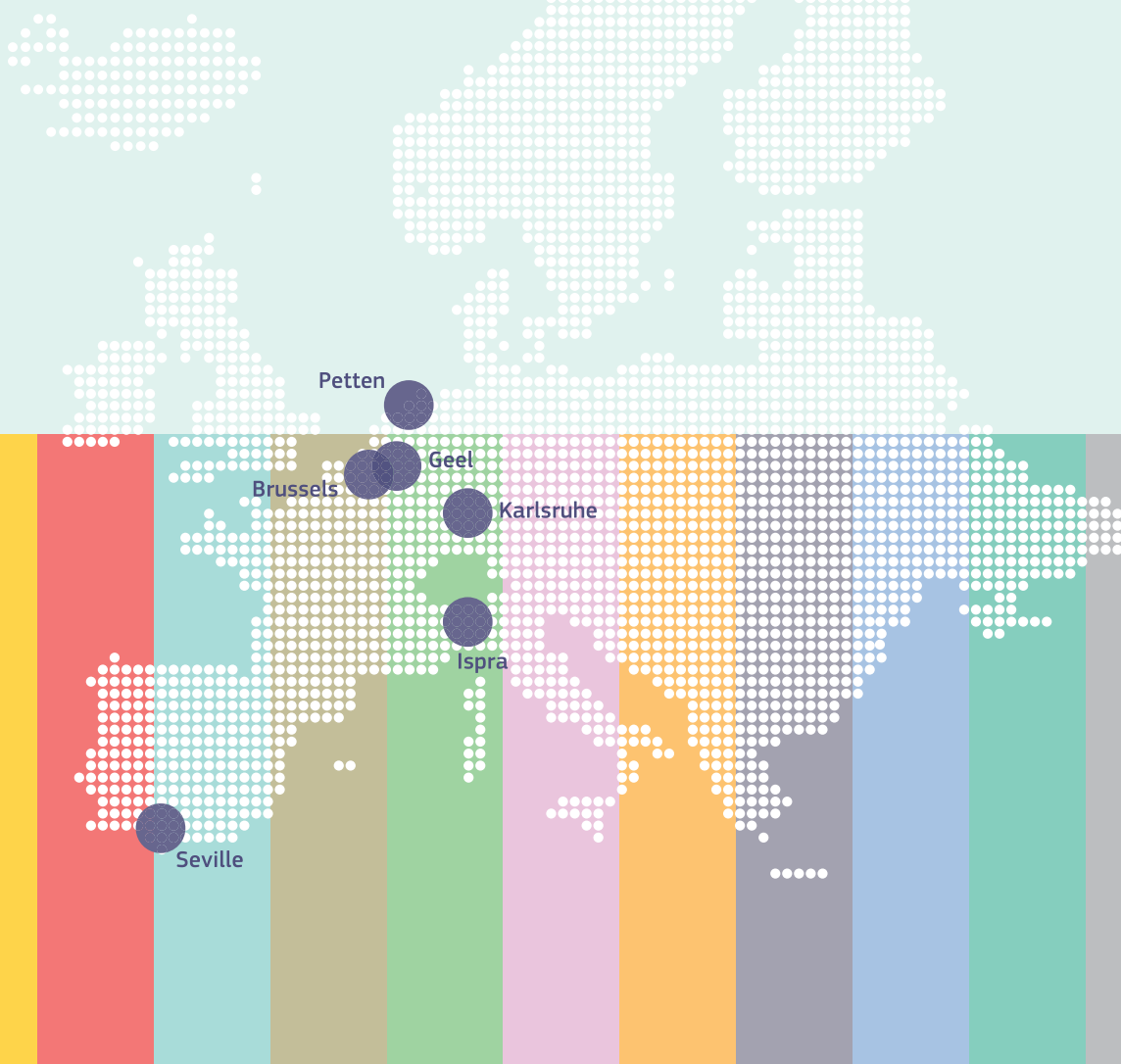
Our aim is to use scientific knowledge to build solutions that are effective, efficient, equitable and sustainable.

While most of our scientific work serves the European Commission and the EU citizens by supporting the preparation and implementation of EU legislation, we also work with national and local authorities in European countries. We cooperate with the scientific community and with international partners. We collaborate with over a thousand organisations worldwide whose scientists have access to many JRC facilities and capabilities through collaboration agreements.

The JRC is predominantly funded by the EU framework programme for research and innovation, Horizon 2020 (2014-2020), and by the EURATOM Research and Training Programme for its nuclear work. We employ about 2 800 staff and are located in five Member States: Brussels and Geel in Belgium, Petten in The Netherlands, Karlsruhe in Germany, Ispra in Italy and Seville in Spain.

Our Board of Governors represents the Member States and associated countries and contributes to devising the JRC's strategy and work programme.

We are located in five Member states: Brussels and Geel in Belgium, Petten in The Netherlands, Karlsruhe in Germany, Ispra in Italy and Seville in Spain



Why should you engage with us?

We strive to be fully policy-relevant and world-class in knowledge generation and management. We believe that collaboration with European national and local authorities is mutually beneficial.

To maintain and further improve the quality of our research, we maintain a close relationship with experts in European countries and beyond, build strategic partnership and involve national scientists in projects and thematic advisory panels. We are producing, collecting and making sense of data, information and knowledge. Collaborating with national authorities responds to a larger ambition to open up to the outside world.

Our activities spread across policy areas and support both the preparation and implementation of legislation – be it at European or national level. Our collaboration with national authorities gives us unique insights into whether or not specific aspects of European legislation work well in practice. These are then fed back into our activities in the preparatory phase of the legislative process.

More importantly, we share our knowledge to provide national, regional and local authorities the factual information to support them in taking the best policy decisions, for example whether by evaluating the potential of a local investment or by assessing the causes of pollution in the area.

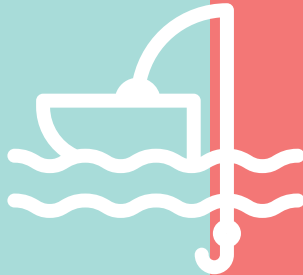
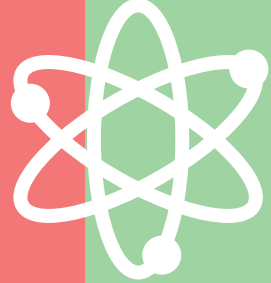
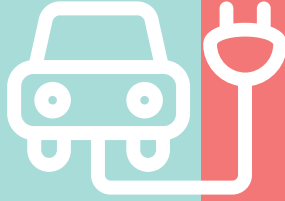
We collect and give access to vast amounts of country-specific and regional data that can be used in raw form or together with our analyses relevant to the European context. We collect and facilitate the exchange of best practices. We open access to unique research infrastructure to complement national research capacities.

We can help smaller administrations with resources and expertise they may lack and larger European countries and regions with European networking, scientific data and analysis in order to account for their situation into the wider EU context.

We offer our science-for-policy expertise as a service that adds value to national science infrastructures and policy makers. Collaborating with us presents the opportunity for actors at national level to tap into our unique capabilities and expertise to develop or complement their own.

We offer our science-for-policy
expertise as a service that
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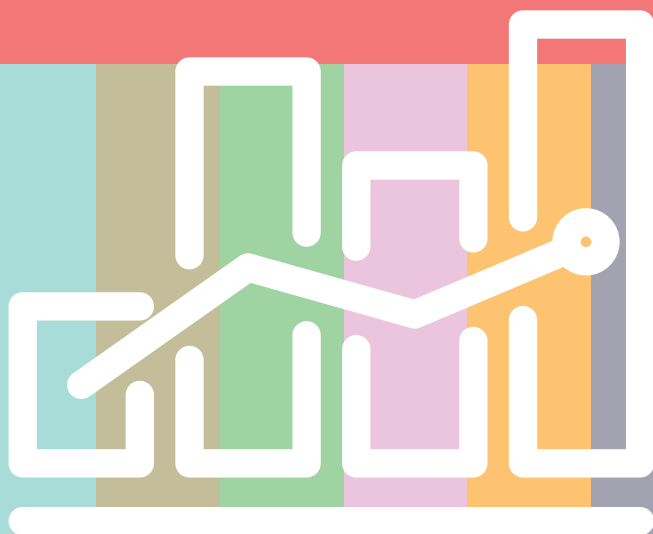
How we can help better inform your policy making

Wherever our activities meet the needs of national, regional or local authorities, there is room for collaboration. From informal contacts to elaborate collaboration agreements, the scope is vast. A great variety of science-for-policy areas exists and within each of these, many tools and services can help.

The policy domains presented here follow our "priority nexus" approach, and reflect the current main areas of JRC expertise and research. They do not prevent us from tackling new challenges as they emerge. Rather, these are bound to evolve over time, as priorities change. The list below provides notable examples and case studies that hopefully will inspire you to engage and challenge us with your specific science-for-policy needs.

Economy, finance and markets

Our scientific approach contributes to deepening the Economic and Monetary Union, one of the European Commission's key priorities. With our modelling expertise, socio-economic analyses and analytical tools, we provide useful means for the Commission and Member States to restore a strong and stable financial system for the EU.





Monitoring and Analysis of the Economic Situation and Prospects

We provide macro-economic analysis models, which contribute to informing national economic decisions. In particular, the Global Multi Country (GM) model and QUEST models are used to produce the following types of studies:

- ▶ Estimation and analysis of shocks and cross-country spill overs;
- ▶ Assessment of drivers of economic developments with shock decompositions applied to historical data or to the forecasting horizon;
- ▶ Assessment of drivers of growth and imbalances (fiscal, current account, unemployment, competitiveness);
- ▶ Fiscal and monetary policy interaction;
- ▶ Analysis of structural reforms;
- ▶ Effects of public investment on GDP and employment.

READ MORE: <http://europa.eu/!wh38kC>



Monitoring and Analysis of the Banking Sector

We continuously monitor the resilience of the EU banking sector to potential financial crises through our in-house micro simulation portfolio model, SYMBOL. On the basis of SYMBOL, we offer technical analyses for:

- ▶ Estimating potential losses that might hit public finances;
- ▶ Evaluating banks recapitalisation needs for continuous operation and financing the real economy;
- ▶ Estimating potential benefits for public finances of safety net tools (capital requirement rise, bail-in, resolution funds).

READ MORE: <http://europa.eu/!gG47vk>



Smart Specialisation Platform on Industrial modernisation (S3P-Industry)

We promote an open process for interregional collaboration on business-driven investments, providing direct assistance to EU Member States and regions to initiate partnerships in specific innovation themes linked to industrial modernisation. We provide

backing mechanisms in support of concrete investment projects linked to these themes. These are made available to partnerships operating through the platform in line with their status and needs.

READ MORE: <http://europa.eu/!tm36PD>

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Monitoring and Analysis of Fiscal Imbalances and Tax Systems

We monitor fiscal imbalances in the European Union in application of the Stability & Growth Pact with the program GAP, used by all European countries. We also participate in the Output Gaps Working Group (OGWG). We offer training sessions on the use of GAP to national authorities in the Member States.

We also offer to carry out simulations of tax reform using the EUROMOD tax-benefit microsimulation model.

READ MORE: <http://europa.eu/!DV46uk> <http://europa.eu/!Ku34nq>

CASE STUDY

Technical assistance to the Tax Policy Unit of the Greek Ministry of Finance on fiscal modelling

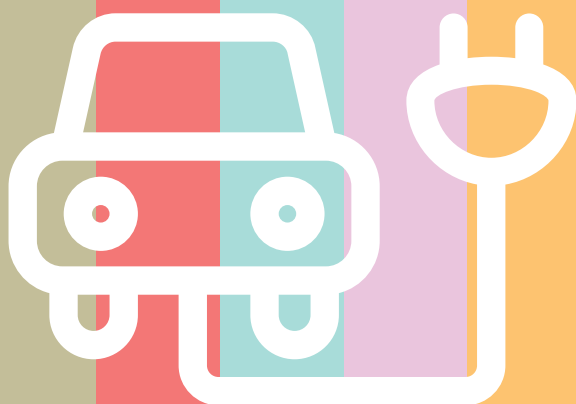
The Greek Ministry of Finance requested assistance to set up and run improved fiscal modelling operations that allow better use of micro-data and microsimulation tools to inform policy decisions.

A JRC expert has been detached at the Greek Ministry of Finance to support its Tax Policy Unit with specific tools for simulation and evaluation of reforms of the tax-benefit system. The main tool used is the EU-wide microsimulation model EUROMOD. This was accompanied by training and technical assistance on the management and use of micro-data shared by the Greek tax authority for tax simulation purposes.

This activity is carried out within the frame of the Third Memorandum of Understanding with Greece, and is based on an agreement between the JRC and the European Commission's Structural Reform Support Service (SRSS).

Energy and transport

We facilitate the development and deployment of alternative energy sources, including renewables, and on energy transmission, distribution and storage systems. We cover all aspects of energy efficiency, including user behaviour and the safety of new energy saving technologies and devices. In transport, we focus on multi-modal systems and de-carbonisation.





European Energy Efficiency Platform (E3P)

Through the interactive and collaborative online tool, E3P, we facilitate knowledge exchange amongst the online community of energy efficiency experts. We also help scientists and stakeholders in the Member States by:

- Providing a one-stop shop for experts to retrieve information and exchange data;
- Facilitating best practices exchange for national policies on energy efficiency

READ MORE: <http://europa.eu/!KN67GX>



Smart Specialisation Platform on Energy (S3PEnergy)

Through the S3PEnergy activities we support policy-makers, authorities and stakeholders involved in energy, research, and innovation policies and Cohesion Policy funding. We offer proactive match-making to national and regional authorities that have planned investments in energy innovation. Through thematic seminars and guidance materials, we help to reinforce the cooperation between countries or regions, strengthen regional and local capacities, and increase the impact of their activities.

READ MORE: <http://europa.eu/!bV73Nr>



Strategic Energy Technologies Information System (SETIS)

Through the online platform SETIS we offer a repository of reports, publications and other key documents on low-carbon energy technologies, their market and performance, as well as analyses of barriers to their large scale deployment. We also provide guidance on innovation landscape in the field of energy, and methodological advice for monitoring progress. The European R&I Energy Landscape database allows the Member States to locate partners across Europe for energy related research and innovation projects.

READ MORE: <http://europa.eu/!tB97jJ>



Analysis of Electricity and Gas Systems and Assessment of Investments

We offer to assess electricity power and gas infrastructures as well as markets, impact on security of supply and integration of renewable sources and storage. We also offer to assess investments in electricity and gas infrastructure and in LNG terminals. We can also provide assistance on smart specialisation in smart grids, Cost-Benefit Analysis of smart grid projects, evaluation of the integration of retail markets, distribution grids and consumers/prosumers.

READ MORE: <http://europa.eu/!Bw34KX>



Photovoltaics performance assessment tools

We provide access to a set of computational tools and climatic data:

- ▶ The online PVGIS application gives location-specific data on solar radiation and photovoltaic performance for Europe, Africa and most of Asia.
- ▶ PVGIS also provides the typical meteorological year (TMY) data needed for building energy consumption calculations.
- ▶ The EMHIRE tool gives access to 30-year time series datasets of photovoltaic power production for EU regions, capturing a broad range of climatic effects.

The JRC European Solar Test Installation is a world-leading lab for measuring the performance of photovoltaic products. It offers free-of-charge calibration of reference devices for EU national laboratories and verification of technologies developed in EU-supported research projects. A commercial calibration service for industry is also offered, focusing on innovative devices

READ MORE: <http://europa.eu/!rN89un>



Energy and Climate Change Impact Assessment

Our modelling tool POTEnCIA (Policy Oriented Tool for Energy and Climate Change Impact Assessment) allows for a robust assessment of the impact of different policy futures on the EU energy system. This covers each European country separately and can analyse a projection period up to 2050. We can offer national authorities detailed energy balances and energy- and process- related CO₂ emissions; energy system costs and prices; activity indicators; installed equipment capacities, characteristics and rate of use; dynamic technology improvements for the demand side.

READ MORE: <http://europa.eu/!rt99VD>

CASE STUDY

Support to the synchronization of the Baltic States to the EU power system

We were mandated to describe and evaluate scenarios that would allow the full integration of the Baltic electricity system within the EU power and energy market framework. This required a thorough assessment of the implications of the desynchronisation of the Baltic electricity grids from the Russia/Belarus system.

We compared scenarios on generation cost and required power system investment over the 2025 and 2030 horizons. We modelled the Baltic power system based on data on current and projected topology, demand, and costs gathered from the European Network of Transmission System Operators (ENTSO) and the region's transmission system operators. The scenario of synchronisation with the continental European network emerged as the most cost-effective option.

This finding, together with other market analyses and studies on infrastructure investment, contribute to the decision making in the Baltic Energy Market Interconnection Plan (BEMIP) platform, where all the European countries concerned by the issue (Lithuania, Latvia, Estonia, Finland, and Poland) are represented.

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Transport tEchnology and Mobility Assessment platform (TEMA)

Through the big data platform, TEMA (based on GPS mobility data and natively interfaced with GIS-based digital geographic mapping systems.), we offer a wide-range of mobility analyses, characterising the driving behaviour of the vehicles at regional level and investigating the potential of innovative vehicle technologies nested in complex transportation systems.

READ MORE: <http://europa.eu/!Tq39qM>

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Transport Research and Innovation Monitoring and Information System (TRIMIS)

Through TRIMIS, we support the establishment and implementation of the Strategic Transport Research and Innovation Agenda (STRIA), and map transport technology trends and research and innovation capacities.

A total of seven STRIA roadmaps have been developed covering various thematic areas, namely:

- ▶ Cooperative, connected and automated transport
- ▶ Transport electrification
- ▶ Vehicle design and manufacturing
- ▶ Low-emission alternative energy for transport
- ▶ Network and traffic management systems
- ▶ Smart mobility and services
- ▶ Infrastructure

READ MORE: <http://europa.eu/!Cg99Qm>

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Transport Modelling

We offer modelling tools for transport generation and assignment, economic activity, trade, logistics, regional development and environmental impacts. We can also assist with the assessment of the optimal geospatial allocation and type of EV charging points.

READ MORE: <http://europa.eu/!xh67vJ>

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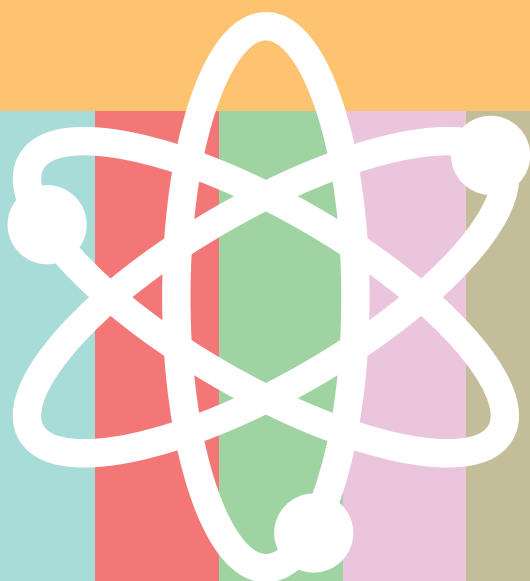
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- ▶ Smart mobility and services
- ▶ Infrastructure

READ MORE: <http://europa.eu/!Cg99Qm>

Nuclear applications

An important part of our work focuses on the safety, security and safeguard of current and new generation nuclear reactors and fuel cycles. We host scientific infrastructure which can be accessed through our new Open Access to JRC research infrastructure programme (see page 58 herein). We also offer training on detection and response to illicit trafficking of radioactive and nuclear materials.





Radioactivity Environmental Monitoring (REM)

The REM (Radioactive Environment Monitoring) database provides a single framework to collate qualified environmental radioactivity data originating from many and diverse sources.

In the case of a nuclear or radiological/nuclear emergency, REM provides support for the exchange of essential data and information, namely:

- Messages notifying that an accident has happened, as well as all subsequent official information which are sent through the official EC emergency network ECURIE (European Community Urgent Radiological Information Exchange);
- Real-time monitoring information collected from automatic surveillance systems in 37 European Countries by the EURDEP system which further redistributes the data to the national and international competent authorities;

In addition and in collaboration with the relevant Competent Authorities, we have compiled the European Atlas of Natural Radiation (EANR), which provides for the entire European territory a collection of maps displaying the levels of naturally occurring radioactivity at regional level. Overall, it contributes to estimating the annual dose that the public may receive from natural radioactivity, combining all the information from the different sources and maps. The atlas provides reference material and generates harmonised data for the scientific and regulatory community. It is also a public information tool.

READ MORE: <http://europa.eu/!Ur97dX>



European Human Resources Observatory for the Nuclear energy sector (EHRO-N)

With EHRO-N, we produce and regularly update a quality-assured database on human resources needs for the different stakeholders in nuclear energy and nuclear safety. Particularly we help identifying gaps and deficiencies in the European nuclear education and training (E&T) infrastructure and elaborating recommendations for remedial actions and optimisation. We also play an active role in the development of a European scheme of nuclear qualifications and mutual recognition (the European Credit System for Vocational Education and Training/ECVET).

READ MORE: <http://europa.eu/!xq44du>



ClearingHouse on Operating Experience Feedback

The Clearinghouse is a European central repository on operating experience feedback for nuclear power plants. We gather and file systematically operating events feedback from European Nuclear Regulatory Authorities and their Technical Support Organizations (TSO). The Clearinghouse supports the communication, cooperation and experience sharing amongst these institutions and offers public access to a number of its reports.

READ MORE: <http://europa.eu/!bw86pk>



Storage of Thermal REactor Safety Analysis Data (STRESA)

We provide a secure repository of experimental data, intended for disseminating information from largescale scientific projects and activities in the fields of severe accident modelling and of emergency preparedness and response. The thermal hydraulic experimental data recorded in Integral Effect Test Facilities (ITFs) are traditionally used in order to validate Best Estimate system codes and to investigate the behaviour of Nuclear Power Plants under accident scenarios. In the same way, facilities dedicated to specific thermal hydraulic severe accident phenomena are used for the development and improvement of specific analytical models and codes used in the severe accident analysis for Light Water Reactors.

READ MORE: <https://stresa.jrc.ec.europa.eu>



Online Data & Information Network for energy (ODIN)

With the ODIN portal we provide access to engineering and document databases and other information related to European research in the domains of nuclear and conventional energy. It contains engineering databases MatDB and HIAD plus the document database DoMa and other related information. The MatDB database application can be configured to serve the data management needs of individual research organizations. It supports open, registered, and restricted data access and modules for entering, browsing, and retrieving data.

READ MORE: <https://odin.jrc.ec.europa.eu/odin>



Strategic export control activities with national stakeholders

We provide technical advices, analyses, capacity building and direct collaboration with national authorities in the area of strategic trade control, including:

- ▶ Development of technical assistance to EU export control authorities by the EU Pool of experts on Dual use export controls
- ▶ Monthly analyses of export authorisation denials
- ▶ Supporting EU and MS in international export control regimes
- ▶ Virtual Expert Groups for the technical amendments to sanctions
- ▶ Capacity building through technical seminars and simulation exercises

READ MORE: <http://europa.eu/!yf46BF>



Fuel, Materials and Fuel Cycle Performance

We provide expertise, laboratory and infrastructure as well as data analysis capabilities to support the safety of current and future innovative reactors and fuel cycle.

- ▶ We provide scientific data on nuclear fuels and materials for simulation tools developed by research and technical safety organisation and for codes and standards
- ▶ We assist in the preparation of irradiation programs and post irradiation examination for the Member States' programs on Generation IV and Industrial Initiatives.
- ▶ We conduct dedicated experiments for the understanding of safety aspects of innovative systems as developed by Member States.

The generated data are used as input for fuel modelling codes such as JRC's TRANSURANUS. The code is applied for design as well as for licensing of nuclear fuel.

READ MORE: <http://europa.eu/!GT79gW>



Decommissioning and Waste Management

The responsible and safe management of waste generated through the application of radioactive material in nuclear energy including decommissioning, industry, research and medicine is regulated

through the Council Directive 2011/70/EURATOM ("Establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste").

We provide expertise, laboratory and infrastructures as well as data analysis capability to support the decommissioning of nuclear reactors and facilities and the management and disposal of nuclear waste.

Through the decommissioning of our JRC nuclear infrastructure (<http://europa.eu/!wQ87fw>) we provide expertise and test bench to Member States.

To ensure that European nuclear facilities are safely decommissioned it is important that qualified and experienced personnel are available. The JRC is leading the European Learning Initiatives for Nuclear Decommissioning and Environmental Remediation (ELINDER) where we organise together with our partners dedicated courses for this professional development. (<http://europa.eu/!WC64Dk>).

We produce scientific data in support of nuclear waste disposal in geological formations and for the associated safety case. We provide an Integrated Knowledge Management System to maintain and transfer to the next generation the great amount of knowledge and data generated.

READ MORE: <http://europa.eu/!Yb86UD>

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Nuclear Security and Safeguards

We provide expertise and laboratories to address key priorities related to the minimization of risk of nuclear proliferation and the protection against illicit trafficking of nuclear and radiological materials. Further items of relevance are the efficient and effective operation of a European and International nuclear safeguards systems.

- ▶ We support the testing and validation of nuclear detection equipment for EU partners in JRC facilities.
- ▶ We grant open access to a number of our nuclear facilities such as the PERLA and ITRAP laboratories.
- ▶ We conduct nuclear forensics analysis for EU MS and different authorities.

We operate the ESARDA network that gathers EU MS authorities, operators, industry and academics.

CASE STUDY

Training sessions for EU Customs officers at the JRC European Nuclear Security Training Centre (EUSECTRA)

Since its launch, the JRC's European Nuclear Security Training Centre EUSECTRA has instructed front-line officers, trainers and experts from over 70 countries on how to detect and respond to illicit trafficking of radioactive and nuclear materials.

The training curriculum is meant to be beneficial for all EU customs preparedness, detection and response for Radiation and Nuclear (RN) detection and safety. Participants are provided hands-on training on nuclear detection with emphasis on realistic detection scenarios involving radioactive and nuclear material, including Naturally Occurring Radioactive Materials (NORMs).

EUSECTRA training has a proven track record of improving detection capability at border crossing points and elsewhere on the external borders, increasing the knowledge, skills, and expertise of customs officers operating RN detection equipment, and enabling the identification and dissemination of best practices among participants.

Since 2015, customs detection experts of all the EU countries, Albania, Bosnia and Herzegovina, the Former Yugoslav Republic of Macedonia, Montenegro, Serbia and Turkey have been trained in EUSECTRA.

Education, skills and employment

We look at how to achieve equitable access to education and training, which is a prerequisite for a fairer society. We analyse the impact of e-learning and other new forms of education. We support efforts to forecast future skills needs so they can be matched with skills training. We analyse the opportunities of the 'on demand' or 'gig' economy and its implications for social protection systems.





Open and Innovative Education and Training

We can provide guidance to Member States on developing, promoting and collecting data from our self-evaluation instrument for schools' level of integration of digital learning (digital maturity). We can also support Member States in the development of policies on open education and Higher Education Institutions for the use of the "open education" framework.

READ MORE: <http://europa.eu/!Cf88Vf>



Analysis of the performance of different national education and training systems

We participate to the implementation of the flagship Education and Training 2020 Strategy by analysing the performance of different national education and training systems. We monitor and assess structural reforms under the Employment Guidelines through qualitative and quantitative methods. The data gathered in the context of the annual Education and Training Monitor allows Member States to benchmark their performance against each other and to point towards policy levers, assess the broader context and shed light on closely related domains of interest that may affect performance.

READ MORE: <https://crell.jrc.ec.europa.eu>



European Reference Framework for Digital and Entrepreneurship Competences

We can provide guidance on the use of the reference framework on Digital Competence for the development of Member States' digital skills strategy, for the review of educational curricula, development of teacher training, and/or the certification schemes for citizens. The reference framework is currently used by more than 10 Member States or Regional governments (Spain, UK, Estonia, Flanders, Malta, Slovenia, Italy, Croatia, and within Spain: Basque region, Andalucía).

READ MORE: <http://europa.eu/!UN79gW>



Self-reflection on Effective Learning by Fostering Innovation through Educational Technologies (SELFIE)

We help school communities understand where they stand in their use of digital technologies, with an online easy-to-use self-reflection tool for schools in Europe. SELFIE asks questions to school leaders, teachers and students and, based on this feedback, provides a picture that is a SELFIE: a snapshot of the school's strengths and weaknesses in their use of digital technologies for learning. School officials and other education authorities can more easily assess where a school is and, from there, decide what they want to improve, and build their own strategy.

READ MORE: <http://europa.eu/!bf67nV>

CASE STUDY

Intersectoral mobility report used to inform Industrial Doctorate legislation in Poland

The Polish Ministry of Science and Higher Education was planning new legislation on industrial doctorates and asked our advice on how to assess the impact of the measure being prepared.

Based on the results of an Intersectoral mobility and knowledge transfer report, we provided suggestions through the Polish ministry's public consultation on the planned legislation. Our report maps the policy measures supporting intersectoral mobility in the Member States and, based on the evaluation of the policy measures, analyses the available evidence of their impact. It provided strongest evidence in the industrial PhDs evaluations and clearly demonstrated the impact on skills and employability of PhD researchers. Given the relevance of these findings for the Polish initiative, we were also invited to present them to the National Congress of Science Thematic Conference on the Science-Industry Cooperation, which allowed for a useful contribution to the national discussions on the Industrial track of scientific careers.

As a result of these activities, the Polish authorities amended the evaluation methodology proposed, substantially broadening the scope of impact indicators to be taken into account.

Food, nutrition and health

We cover different aspects of the food value chain, including food waste, packaging waste and recycling and sustainable materials for the production of food packaging. We also cover food and feed safety and quality. We examine the implications of new technologies. We look at nutrition and health, improved prevention and personalised medicine, consumer protection and choice. We contribute to the design of public health systems and digital-health.





European Union Reference Laboratories (EURLs)

We manage the European Union Reference Laboratories, mainly related to food safety and pre-marketing authorisation of food and feed products in Europe. EU Reference Laboratories cooperate with National Reference Laboratories and official control laboratories in Europe by organising workshops, expert meetings, Proficiency Testing exercises trainings and knowledge sharing.

The EU Reference Laboratory for Alternatives to Animal Testing (EURL ECVAM), is engaged in the development, validation and promotion of non-animal methods intended for safety and efficacy testing of chemicals and biological agents (e.g. vaccines) used in different sectors. In support of validation activities and cooperation with European countries, EURL ECVAM coordinates the EU Network of Laboratories for the Validation of Alternative Methods (EU-NETVAL) which has currently 37 member facilities located across Europe.

The EURL ECVAM also supports the National Committees established in accordance with Directive 2010/63 for the protection of animals used for scientific purposes.

READ MORE: <https://ec.europa.eu/jrc/en/eurls>



The Information Platform for Chemical Monitoring Data (IPCHEM)

Through the reference gateway, IPCHEM, we offer policy makers and scientists in European countries a more coordinated approach for searching, accessing, retrieving, assessing and sharing chemical occurrence data across various media (e.g. environment, humans, food/feed, indoor air and consumer products).

READ MORE: <https://ipchem.jrc.ec.europa.eu/>



Knowledge Centre for Food Fraud and Quality (KCFFQ)

The Knowledge Centre for Food Fraud and Quality (KCFFQ) is designed to collate, integrate and make sense of the available knowledge related to the detection of fraud in the food supply chain, and to create tools to deter fraudsters from adulterating food. Operated by the European Commission, the Centre intends to both support policy making at European level and help national competent authorities in Europe in taking regulatory action against those perpetrating economically motivated food adulteration. It notably coordinates market surveillance activities and operates an early warning and information system.

READ MORE: <https://ec.europa.eu/knowledge4policy/food-fraud>



Knowledge Centre for Global Food and Nutrition Security (KC-FNS)

The Knowledge Centre for Global Food and Nutrition Security supports the EU's global commitment to end hunger, and to achieve food security and improved nutrition in countries where food and nutrition security and sustainable agriculture are focal areas of EU intervention. It aims to translate and integrate the results of scientific research into policies and reinforce the dialogue and coordination between the European Commission's services.

It will facilitate the sharing of knowledge, expertise and lessons learned among European services through a one-stop access point with pertinent European Commission visualisation and analysis tools as well as data and publications. On specific topics, the knowledge centre will conduct a synthesis of existing information and a knowledge gap analysis. When needed, it will provide a space for networks of scientists and policy-makers.

READ MORE: <https://ec.europa.eu/knowledge4policy/global-food-nutrition-security>

CASE STUDY

Ensuring the Integrity of the European Food Chain

The Food Integrity Project brings together 38 international partners from industry, academia and government institutes. It focuses on the harmonisation and exploitation of research and technologies to ensure the integrity of European food, to boost consumer confidence about its safety, authenticity and quality, and to protect the European agri-food industry's added value.

The Project:

- ▶ Builds a comprehensive knowledge base linking specific food commodities to potential fraud or integrity issues, together with the analytical strategies that can be used for food fraud detection or authenticity testing;
- ▶ Provides Gap analysis and stakeholder consultation to identify in which areas of food integrity to initiate new research;
- ▶ Develops and implements olive oil quality and authenticity control methodologies;
- ▶ Creates an early warning system for food fraud and adulteration detection.

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Prevention of non-communicable diseases

We support EU and national policymakers in planning, implementing, and evaluating public-health actions aimed at preventing non-communicable diseases (e.g. cardiovascular diseases, obesity, diabetes and cancer).

READ MORE: <http://europa.eu/!fB47Px>; <http://europa.eu/!hr96Nh>



Information on cancer and rare diseases

We harmonise and publish cancer data and monitor the cancer burden in Europe. The European Cancer Information System enables the exploration and visualisation of geographical patterns and temporal trends of cancer incidence, mortality and survival rates in Europe. We also support the European Network of Cancer Registries.

We work on harmonisation of rare diseases (RD) data and are developing the European Platform on RD Registration. The Platform will ensure interoperability for RD data, currently fragmented between more than 600 patient registries scattered across Europe. It will also include two major RD surveillance networks already hosted by the JRC.

READ MORE: <https://ecis.jrc.ec.europa.eu/>; <http://europa.eu/!FK46Yw>



Harmonisation and standardisation of cancer healthcare quality

The European Commission Initiative on Breast Cancer aims to improve and harmonise breast cancer care in Europe. To ensure that the same, top-quality level of care is available everywhere in Europe, we are developing recommendations for breast cancer screening and diagnosis and a European quality assurance scheme for breast cancer services. A similar initiative is being developed to tackle the challenge of colorectal cancer.

READ MORE: <http://ecibc.jrc.ec.europa.eu>

Resource scarcity, climate change and sustainability

We focus on mitigation of and adaptation to climate change and resource scarcity and their impact on land/soil, water, agriculture, forestry, biodiversity and critical raw materials. We look at alternatives to scarce resources and new sources of resources. We support the development of a circular economy and a sustainable bioeconomy in Europe. We work on air, water and soil quality, ecosystems services and biodiversity.





Integrated policy assessment of the Economic benefits of water policies

We look into current and future water availability and demand, taking into account economic aspects such as costs of water scarcity for the various water-using sectors, energy and agricultural production. By working together with Member States, we assess the economic benefits of EU fresh- and marine water policies and the costs of their non-implementation. We provide a perspective on the environmental impacts of future growth of maritime economic activities.

READ MORE: <http://water.jrc.ec.europa.eu/waterportal>



Supporting Compliance with Air Quality and Emissions Legislation

We can provide quality assurance of Member States' air quality monitoring programmes (ERLAP) as well as guidance on air quality modelling and monitoring in accordance with the requirements of EU air quality legislation (FAIRMODE). We can also offer tools to support national authorities in presenting their gridded national emission inventories.

READ MORE: <http://europa.eu/!nG77cb>



Best Environmental Management Practices

We can produce reference documents and can provide guidance on best environmental management practices to support efforts by public administrations and other organisations at various levels throughout the EU. These reference documents address, for example, services provided by local public administrations (e.g. water supply, municipal waste water treatment) and, more broadly, how to address the main environmental aspects of local territorial administration e.g. sustainable energy and climate change, mobility, local air quality, land use, noise pollution, green urban areas, environmental education and dissemination of information to citizens and businesses.

READ MORE: <http://europa.eu/!Gw93Xp>



EU Raw Materials Knowledge Base

The EU Raw Materials Knowledge Base provides data on supply and demand, indicators for monitoring raw materials value chains, aspects of primary and secondary raw materials, trade issues related to minerals and metals, technology and innovation. The knowledge base can be useful for industry associations and for designing industrial policies.

READ MORE: <http://europa.eu/!cj96BN>



Knowledge Centre for Bioeconomy

The Knowledge Centre for Bioeconomy collects, structures and makes accessible to policymakers and stakeholders in Europe relevant data and information from different sources. We bring together the knowledge and expertise needed to assess the status, progress and impact of the bioeconomy, develop and make available forward-looking tools and results of foresight exercises, and support overall a more systemic and dynamic approach to policy making on the bioeconomy.

READ MORE: <https://ec.europa.eu/knowledge4policy/bioeconomy>



Forests and tree species information

We provide information on the spatial distribution of European forests to enable protection and conservation efforts, resource analysis, climate change research and other forest-related applications. We perform biophysical mapping and assessment of forest ecosystem services, measure changes in the provision of these services as a result of anthropogenic and natural disturbances, and carry out economic valuation and environmental and economic accounting.

Our European Atlas of Forest Tree Species and its underlying dynamic database of information on our trees, their use, the threats they face, and eventually the changes that climate may bring about is a solid resource for forest and forest fire services and other relevant entities in the Member States.

READ MORE: <http://europa.eu/!jf77xJ>



Supporting reporting and compliance with forestry international legislation

We provide quality assurance of Member States' reporting and accounting of GHG emissions and sinks from the land use, land-use change and forestry (LULUCF) sector. We provide guidance on monitoring forest and biomass resources and associated carbon emissions at EU, pan-tropical and global levels, in the context of the European Union's fight against global warming. We also offer tools to support national authorities to develop sustainable forest management and to help mitigate, conserve and enhance the forest sink, while using wood products as substitutes for more carbon-intensive energy and materials.

READ MORE: <http://europa.eu/!Uj67nP>.

CASE STUDY

Integrated Assessment Methodologies to promote sustainable and resilient urban living and air quality improvements.

In addition to supporting national authorities in meeting their obligations under the European legislation on air quality, we can assess the impact of urban and regional strategies for sustainable development. Most notably, we developed the SHERPA tool (Screening for High Emission Reduction Potential on Air) and made it available to local authorities and users.

The SHERPA tool supports policymakers in selecting sound policies to improve air quality by helping them to find the maximum air quality improvement potential from locally designed measures and to identify priority sectors and pollutants to be addressed to improve air quality in a given area. In addition, SHERPA can be used to calculate neighbouring regions' contributions to local air quality.

SHERPA works with a predefined set of input data (including emission inventories) that cover the whole territory of Europe at high resolution. This provides for a straightforward testing methodology for new air quality policies for any given area in Europe.

Civil security

We support emergency preparedness and response and disaster risk management in cases of natural and man-made hazards, including pandemics and epidemics and chemical, biological, radiological and nuclear (CBRN) threats. Our activities cover the fight against crime and terrorism, including combatting illicit trafficking (of people, drugs or weapons), intensified exchange of security-related information, understanding the roots of radicalisation and protection of critical infrastructure. We look at data protection and the use of communications data. We focus on cyber security. We also cover certain technical aspects relating to the implementation of Treaties and Conventions on the non-proliferation of nuclear, chemical and biological weapons.





Knowledge Centre for Disaster Risk Management

The European Commission's Disaster Risk Management Knowledge Centre promotes transformative processes and innovation that improve our understanding of disaster risk, to build resilience and risk-informed approaches to policymaking. It offers scientific and evidence-based support to the full cycle of disaster risk management, thus helping European authorities to prepare and respond to emergencies and to prevent and reduce the impact of disasters.

Through consolidating networks of scientists and policy-makers and an online repository of relevant research results and operational outcomes, the Knowledge Centre facilitates the use of research and identifies gaps, challenges and research needs. It also offers a support system providing national authorities in the EU with technical advice for the assessment of risk and risk management capability.

READ MORE: <http://drmkc.jrc.ec.europa.eu/>



European Drought Observatory (EDO)

The European Drought Observatory provides drought-relevant information such as maps of indicators derived from different data sources (e.g., precipitation measurements, satellite measurements, modelled soil moisture content).

The Observatory provides European authorities with:

- Access to data and forecast tools;
- Access to harmonised information and mapping of damages and assessment of related social and economic impact;
- Support in international collaboration;
- Training.

READ MORE: <http://edo.jrc.ec.europa.eu/>



European Flood Awareness System (EFAS)

The European Flood Awareness System is an operational system for monitoring and forecasting floods across Europe. Part of the Copernicus Emergency Management Service since 2012, it can provide its partner countries with:

- Near-real time monitoring and forecasting of floods up to 15 days in advance;

- ▶ Specific products addressing flash floods providing seamless forecasts ranging from radar based precipitation monitoring, nowcasting and short-term flash flood forecasts;
- ▶ On-line web based system enabling the access to numerous different flood related products at European wide level;
- ▶ Response to ad hoc requests of specific assessments during major flood crisis in Europe;
- ▶ European wide network for knowledge exchange on new and innovative developments for operational flood forecasting.

READ MORE: <http://europa.eu/!kw88vt>

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European Forest Fire Information System (EFFIS)

EFFIS is an operational web information system that supports European national services in charge of the forest fire management. It is part of the Copernicus Emergency Management Service since 2015. It can provide:

- ▶ Near-real time information in support of fire prevention, preparedness, firefighting and post-fire evaluations;
- ▶ Assessments from pre-fire to post-fire phases;
- ▶ On-line web based system that includes harmonized information at European level and a comprehensive European fire database;
- ▶ Daily maps of forecasted fire danger together with fire statistics for the on-going fire season;
- ▶ Response to ad hoc requests of specific assessments during major forest fire crisis in Europe.
- ▶ Yearly comprehensive reports on “Forest Fires in Europe, Middle East and North Africa” in collaboration with the national fire administrations.

READ MORE: <http://europa.eu/!TF49PG> <http://europa.eu/!YB36YW>

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Assistance to analyse accidents in chemical industries

We can provide common reference scenarios for local and regional authorities to assess the risks associated with industrial sites where dangerous substances are stockpiled, taking into account their proximity to residential areas, transport infrastructure or other public spaces. The use of common reference scenarios has the added benefit of increasing the confidence of citizens that all necessary measures are being taken to reduce the potential impacts from serious chemical accidents.

READ MORE: <http://europa.eu/!TF49PG> <http://europa.eu/!YB36YW>



Copernicus EMS on-demand mapping services

The Copernicus Emergency Management Service can also provide geospatial information (maps) derived from satellite images to assess the impact and respond to natural and man-made disasters. CEMS Mapping is available to countries participating in the Civil Protection Mechanism, as well as to EU institutions and international Humanitarian Aid organisation. It can provide:

- ▶ Rapid Mapping for emergencies that require an immediate response;
- ▶ Risk & Recovery Mapping for situations that do not require immediate action such as prevention and disaster risk analysis and recovery activities.

READ MORE: <http://emergency.copernicus.eu/>

CASE STUDY

Support to monitoring forest fires in Central Sweden

Warm and dry weather caused fast-moving forest fires across Sweden in July 2018.

In response to the approximately 50 forest fires which burned across Sweden, the Swedish Civil Contingencies Agency activated the Rapid Mapping Component of the 'Copernicus Emergency Management Service' for a mapping of the major fires.

To support the response operations, the JRC produced delineation maps showing the extent of the fires over five areas of interest: Enskogen, Hammarstrand, Trangslet, Lillhardal and Strandasmýrvallen.



Global Disasters Alert Co-ordination System (GDACS)

GDACS is an operational system developed under a cooperation framework between the United Nations, the European Commission and disaster managers worldwide to improve alerts, information exchange and coordination in the first phase after major disasters. GDACS services can support EU Member States:

- ▶ to better coordinate with other states to address disasters in third countries;
- ▶ to get access to more efficient information flows in the early phases of national disasters.

READ MORE: <http://europa.eu/!cH47wu>

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Container-Traffic Analysis System (CONTRAFFIC)

Through our prototype system, CONTRAFFIC, we can provide information on the movement and status of millions of shipping containers used to transport most EU imported and exported goods. Through our web-based tool, we can provide not only almost real-time valuable information but also a visual analytics interface for the visualization and analysis of billions of historical records and of statistical traffic data. Through CONTRAFFIC we can support the customs and border control authorities in European countries:

- ▶ in investigations and control exercises, by providing detailed information on the movement and status of relevant shipping containers;
- ▶ to perform an improved risk assessment for goods arriving and leaving the European Union in shipping containers, through the additional logistics data.

READ MORE: <http://europa.eu/!uq96JF>

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Training for Energy Operators

In the context of the European Reference Network for Critical Infrastructure Protection (ERNICIP), we can provide tailor-made training courses for European authorities, upon explicit request. National authorities are also invited to actively participate in the ERNICIP thematic groups, which can help to address security related issues, and to network with other security specialists in Europe to exchange best practices and knowledge.

READ MORE: <https://erncip-project.jrc.ec.europa.eu/>

Migration and territorial development

We look at the root causes, likely scale and timing of population flows. We study the impact of population flows across all dimensions – social, cultural, economic and psychological. We study the implications of demographic change and rapid urbanisation. We seek ways of measuring and maximising the impact of regional funding.





Knowledge Centre on Migration and Demography (KC-MD)

We facilitate access to knowledge related to migration and demographic change. The knowledge centre helps to better anticipate future migration flows and population trends and understand their impact on the EU health, welfare, education system, economy and society as a whole.

Through accessing the Knowledge Centre's Migration Data Catalogue and Dynamic Data Hub tools, national and local stakeholders can have information about all existing data sources and key datasets related to migration. In addition, the Knowledge Centre offers high-resolution maps depicting the spatial segregation of migrant communities in cities (available for several Member States) which can be useful for their migrant integration policies. The Knowledge Centre shall make available in the near future other searchable catalogues on migration related activities and projects, studies, reports, networks and stakeholders in the EU and internationally.

READ MORE: <http://europa.eu/!mQ74CK>



Urban Data Platform

Through the Urban Data Platform users can explore, visualise, compare and download data on demography, urban development, economic development, transport and accessibility, environment and climate, resource efficiency and social issues.

The data available helps cities to establish an evidence base to draft and implement action plans, and to look at future trends to inform policy making.

READ MORE: <http://europa.eu/!gn84FH>



Knowledge Centre for Territorial Policies (KC-TP)

The Knowledge Centre for Territorial Policies gathers, manages and makes sense of the vast amount of knowledge available on European cities and regions. It can support decisions on policies and investments to reduce geographical imbalances across Europe and increase their overall impact, help boost competitiveness, preserve diversity, and improve the quality of life of citizens.

Through the Knowledge Centre, European national and local authorities can exploit our modelling capacities that are based on our territorial impact assessment models, RHOMOLO and LUISA.

READ MORE: <http://europa.eu/!UP66YD>

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Smart specialisation platform (S3P)

Through our smart specialisation platform (S3P) we assist European countries and their regions to develop, implement and review their smart specialisation strategies. Through the S3P we provide guidance material and good practice examples, organise information sessions and training for policy makers, and facilitate access to relevant data. We also organise peer learning sessions based on shared needs put forward by national authorities (for instance, the set-up of RIS3 monitoring systems or the deployment of an effective entrepreneurial discovery process).

We also provide more hands-on support in favour of less-developed regions through focus groups and policy development labs with the participation of local stakeholders and the aim of enhancing the governance of innovation policies and the performance of territorial innovation ecosystems.

We actively support international matchmaking, benchmarking and cooperation of countries and regions with similar economic and innovation profiles through our Thematic Platforms (Agri-food, Industrial Modernisation, Energy). Thanks to the ever wider interest in smart specialisation of countries outside the EU, we also offer possibilities of wider international cooperation. We work on advanced methodologies for identification, updates and monitoring of smart specialisation, available to European countries and their regions through our online tools and publications.

We also provide a combination of mapping tools that allow users to identify the specific domains of specialisation of individual regions across Europe (Eye@RIS3), planned investments in both European Structural and Investment Funds as well as Research & Innovation investments (ESIF Viewer - R&I Regional Viewer), interregional trade flows together with regional benchmarking. These tools aim at facilitating interregional cooperation and the creation of partnerships among various actors throughout Europe.

We also offer the Innovation Camp methodology as a tool for regions and cities to identify local societal challenge and find innovative solutions. At the Innovation Camp, participants from

diverse countries and disciplines work together during 2 -5 days to discover and discuss in-and-out-of-the-box opportunities. This approach combines an entrepreneurial way of thinking with a concrete process for developing breakthrough ideas and insights that lead to real-world impact.

As part of the smart specialisation platform, we offer the Stairway to Excellence (S2E) which assists the European countries that joined the EU since 2004 in closing the innovation gap and using synergies between key EU funding sources for research, development and innovation in the context of national and regional smart specialisation strategies. Through the S2E, we support strategies for capacity enhancement, exchange of experiences and best practices, and strategies for smarter use of funds and better spending.

READ MORE: <http://s3platform.jrc.ec.europa.eu>

CASE STUDY

Support to the implementation of the Research and Innovation Smart Specialisation Strategy (RIS3) in limited growth regions

We are helping in the implementation of the Research and Innovation Smart Specialisation Strategy (RIS3) in 9 lagging regions in 8 countries, including Greece (all regions, with a continued focus on Eastern Macedonia and Thrace), Italy (Puglia), Portugal (Centro), Spain (Extremadura), Romania (Nord-Est and Nord-Vest regions in particular) Bulgaria (Severen Tsentralen), Hungary (Észak-Alföld) and Poland (Warminsko Masurskie).

The main objective is to gain a better understanding of slow and limited growth in European regions and links to macro-economic framework conditions, taking RIS3 as an entry point. Over two years, we assessed the implementation of research and innovation smart specialisation strategy, identifying bottlenecks and systemic failures creating obstacles to the allocation of structural funds, testing and optimising an entrepreneurial discovery process (EDP). The process supported stakeholder engagement, better national-regional coordination, and capacity-building. As a result, regional stakeholders gained better mutual understanding and trust. Concrete steps were taken in implementing RIS3 priorities through targeted support to activities of the European Development Fund in most regions.



Human Settlement Information

The European Settlement Map (ESM) is the first complete and consistent map of built-up areas in Europe with, since 2017, a spatial resolution of 2.5m. The high spatial detail of the information can help to study urbanisation and related features across Europe in urban and rural areas, from continental to country perspective, from regional to local.

READ MORE: <http://europa.eu/!PU68Cd>



Technology Transfer

Once developed, and protected where appropriate, knowledge needs active management and dissemination to generate value and/or social impact.

We routinely manage the intellectual property of the European Commission and promote its further dissemination, use and exploitation. We offer support to regions and countries to build capacity on innovation and technology transfer in collaboration with relevant European and International organisations and institutions. Such combined expertise includes innovation ecosystem design (science parks and incubators), development of technology transfer systems/offices, management of IPR, financial instruments for innovation, access to European innovation practitioners' networks, and more.

READ MORE: <http://europa.eu/!TH67UJ>

CASE STUDY

Capacity Building on Technology Transfer in the Western Balkans

In support to DG NEAR, the JRC is coordinating a project that started beginning 2017 to develop capacity in technology transfer in the six countries of the Western Balkan region. The project is managed by EY consulting with the involvement of several European experts. The work programme includes several study visits, design of regional financial instrument, training and coaching of 15 research groups of excellence in the different countries. The project is linked to smart specialisation and supports its implementation.



Danube Reference Data and Services Infrastructure (DRDSI)

This service provides access to more than 10000 comparable and harmonised data sets of a cross-cutting nature on various issues related to the Danube Region and the European countries that are part of it. It focuses on supporting the collection and management of data resources at a local level, where they are best understood and maintained. Data standards are explored and examples given for how data can be combined.

READ MORE: <http://drdsi.jrc.ec.europa.eu>

CASE STUDY

Leveraging Danube River spatial data in support to EU Water and Floods Directives

Working in the framework of the Danube Region Strategy, the International Commission for the Protection of the Danube River and the participating European countries were faced with the task of adopting river basin management plans and programmes of measures in line with European water legislation. They sought to reconcile the water needs of the different users in the Danube River Basin region, but lacked consistent data upon which to make informed decisions on water resources management.

Together with the International Commission for the Protection of the Danube River (ICPDR), we developed the dissemination infrastructure of the Danube GIS database and its visibility through the DRDSI infrastructure. By doing so, we increased the opening of crucial datasets allowing users to access them and re-use them for other purposes.



Cultural and Creative Cities Monitor (CCCM) online tool

The first edition of the Cultural and Creative Cities Monitor (CCCM), in 2017, shows how well 168 selected cities in 30 European countries perform on a range of measures describing the ‘Cultural Vibrancy’, the ‘Creative Economy’ and the ‘Enabling Environment’ of a city, using 29 quantitative indicators as well as qualitative data. The accompanying online tool allows cities to:

- ▶ Browse quantitative and qualitative information to understand strengths and development opportunities for the 168 selected cities;
- ▶ Compare the performance of peer cities (based on income level, population size or employment rate) from a mutual learning perspective;
- ▶ Adapt weightings to reflect local priorities and see how these changes affect the final city scores;
- ▶ Simulate the impact of policy actions (e.g. increased number of cultural events) to build scenarios;
- ▶ Create a new city entry to give any interested city the possibility to input data and benchmark its performance.

READ MORE: <http://europa.eu/!fN73bV>

Data and digital transformations

We look at how maximum value can be extracted from data and Internet platforms, and the conditions needed to allow this to happen in Europe. Another focus is emerging transformational technologies, such as autonomous and intelligent systems.





PREDICT: monitoring the size of the ICT industry and R&D investments in ICT on a yearly basis

Since 2006, the JRC study "Prospective Insights in ICT R&D" (PREDICT) analyses the supply of Information and Communications Technologies (ICT) and the investments in Research and Development (R&D) in ICT in Europe, with comparison to major competitors worldwide. This research serves to assess the impact of policies and to guide future policy developments in the digital domain.

READ MORE: <https://ec.europa.eu/jrc/en/predict>



European ICT Poles of Excellence (EIPE)

The European ICT Poles of Excellence (EIPE) Project set the general conceptual and methodological conditions for defining, identifying, analysing and monitoring the existence and progress of current and future EIPE. The objective is to improve our capacity to distinguish these poles of excellence among the many European ICT clusters and benchmark them with non-European poles. The project observes their dynamics and offers a thorough analysis of their characteristics.

READ MORE: <https://ec.europa.eu/jrc/en/eipe>



Open Source Intelligence Tools for Law Enforcement

We offer the EMM Open Source Intelligence Suite (EMM OSINT Suite). The Suite is a desktop software application which helps to find, acquire and analyse data from the Internet and local sources. It contains a set of tools to automate tasks to gather intelligence from vast data sets. It comprises a set of powerful tools to support the main processes of intelligence gathering from open sources.

We can customise the EMM OSINT Suite to support a wide range of law enforcement use cases, including typical scenarios, such as:

- ▶ Person Background Check;
- ▶ Relationship Exploration of Persons, Organisations and other entities;
- ▶ Categories Downloaded Material according to Word Patterns.

READ MORE: <http://goo.gl/VNGiYe>



Guidance on use of location information to provide public services

We provide guidelines and reusable tools to promote a consistent and coherent approach to location data in Europe. This allows optimal exchange of location data across borders and sectors, improve public administration business processes, systems and access to location data, and allow cost and time savings thanks to the reuse of location data. We shall provide in the future a "geospatial knowledge base" to help improve legal, organisational, semantic and technical interoperability (e.g. best practices and knowledge sharing).

READ MORE: <http://europa.eu/!Wb68hH>



ICT and standardisation



This activity covers the role of standards and intellectual property rights for ICT innovation and strengthens the EU's presence in international dialogue and cooperation on ICT standards in selected areas (e.g. geospatial, Internet of Things, etc.)



Innovation & Entrepreneurship in the digital economy



We analyse digital innovation and entrepreneurship in the EU, focusing on ICT standardisation and intellectual property rights, on the role of public funding in financing digital innovation; and on entrepreneurship, start-ups and scale-ups. This research supports in particular standardisation, Horizon 2020 and Startup Europe policies, in the wider context of the European Digital Single Market.



Common Information Sharing Environment for Maritime Surveillance (CISE)

We can provide support to national maritime authorities to implement the connection to the Common Information Sharing Environment (CISE), currently being developed by the European Commission and EU/EEA countries. Maritime CISE seeks to enhance and promote information sharing between stakeholders involved in maritime surveillance.

READ MORE: <http://europa.eu/!rN79hx>

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European Interoperability Framework and Strategy and eGovernment

This activity contributes to the development of digital solutions that enable public administrations, businesses and citizens in Europe to benefit from interoperable cross-border and cross-sector public services within the framework of the Interoperability Solutions for European Public Administrations (ISA) programme.

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European Spatial Data Infrastructure

Building on our role of the technical coordinator of the implementation of the INSPIRE Directive, we provide guidelines, reusable tools, training and capacity building to support European and accessing countries in setting up the European Spatial Data Infrastructure. These activities are intended to facilitate the sharing, reuse and interoperability of spatial data, services and related metadata to support a variety of applications in the environmental domain, e-government and many other sectors.

READ MORE: <https://inspire.ec.europa.eu>

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Economics of the Digital Single Market

We provide economic analyses on the implementation of some aspects of the European Digital Single Market (DSM) agenda. In particular, we run a comprehensive assessment of online platforms; we examine the economic impact of (big) data collection & analytics, EU data ownership and access regulation. We analyse cross-border geo-blocking in online services and digital media content, in particular audio-visual media content.

READ MORE: <http://europa.eu/!Bp99md>

Innovation systems and processes

We look at open innovation, including citizen-driven innovation, the protection, and exploitation and trading of intellectual property rights and the characteristics of successful innovation eco-systems. We seek new ways of engaging citizens as early as possible in debates about new technologies.





Research and Innovation Observatory (RIO)

The RIO supports the strategic development of R&I policies in Europe. It produces data and analysis (both qualitative and quantitative) related to R & I systems and policies. It provides analysis and data valorisation of progress of each European country by regular RIO Country Reports, new efficient methodologies for data production, and support in the context of the European Semester.

READ MORE: <https://rio.jrc.ec.europa.eu>



Analysis and modelling for reforms to increase corporate R&D

We perform cross-country analytical work on financing high-growth, innovative enterprises, on reducing entry barriers, and on fiscal incentives (qualitative analyses of policies, econometric analysis and macro-modelling using Quest 3).

READ MORE: <http://europa.eu/!gH94WJ>



Competence Centre on Technology Transfer

The Competence Centre on Technology Transfer aims to provide expert services to national, regional and local authorities and relevant stakeholders in three key areas: technology transfer operational support, financial instruments conception and design, and support to innovation ecosystems and clusters. The bulk of the work consists of qualitative analysis of policies, mapping studies and capacity building through training sessions and workshops.

READ MORE: <http://europa.eu/!TH67UJ>



Technology Transfer Offices Circle – TTO Circle

As part of the broader remit of the JRC to disseminate best practices and support EU Member States, we also coordinate the Technology Transfer Offices Circle, to facilitate the exchange of knowledge on practical and operational technology transfer-related issues and on broader technology commercialisation challenges.

READ MORE: <http://europa.eu/!dv88PU>

CASE STUDY

Diagnostic Study of the Governance and Management of the Sofia Tech Park (STP)

The Sofia Tech Park (STP), launched in 2012 and co-funded by the ERDF by over €40m, has been facing a number of challenges. Some of the major challenges have included persistent uncertainty on the availability of financing for operational costs, unclear mechanisms for technology transfer, and a lack of a comprehensive business plan. Ensuring the effective and sustainable operation of STP has been a concern for the Managing Authority (Ministry of Economy). The Bulgarian authorities have become conscious of the inadequate operational status of STP and DG REGIO has requested the JRC's technical assistance to provide recommendations for its future operation.

The JRC's Competence Centre on Technology Transfer has performed a diagnostic study of the governance and management of STP, with the aim of identifying bottlenecks preventing the Park from achieving optimal performance. JRC also recommended tailor-made solutions and suggestions for the operation and effectiveness of the Park. The study was managed by the JRC, which used an independent panel composed of four experts of international repute in science-park design and management. The results of the study and the recommendations were presented during the high-level JRC Conference on Smart Specialisation and Technology Transfer on 3-4 May 2018 in Sofia.

Agriculture and fisheries

To meet the needs of the world's growing population and taking into account changing consumption patterns, natural resources scarcity and the impact of climate change, food production must be increased in an economically, environmentally, and socially sustainable way. We provide independent scientific and technical advice and support.





Integrated Modelling Platform for Agro-economic Commodity and Policy Analysis (iMAP)

We help national governments and other decision-makers use a number of partial equilibrium models (AGLINK-COSIMO, CAPRI, AGMEMOD), computable general equilibrium models (MAGNET, GLOBE, RegEU27), and farm-level models (IFM-CAP, FSSIM-Dev). These models can be used as stand-alone or in combination to address a broad range of topics linked to the ex-ante economic assessment of the agricultural and rural development policies, as well as those concerning related topics such as trade, energy, environment, and climate change.

READ MORE: <http://europa.eu/!fp89Wu>



Technical guidance for implementing the Common Agricultural Policy

We coordinate the Integrated Administration and Control System (IACS) and Land Parcel Identification System (LPIS), for agricultural area, Ecological Focus Area (EFA) elements and cross-compliance restrictions through online data exchange portals, benchmarking of technology (e.g. GPS equipment and satellite images), and guidance on new technologies, Copernicus data and quality management. In the context of agricultural subsidies, we provide up-to-date technical guidance to all stakeholders about agricultural activities, covering which areas are eligible, where payment entitlements can be activated, and what restrictions should be obeyed during farming.

READ MORE: <http://europa.eu/!rF36TK>



Smart Specialisation Platform on Agri-food

The smart specialisation platform on Agri-food gathers and supports regional partnerships for trans-regional cooperation and triggers investments in the agri-food value chains using existing funding instruments. The platform proposes better exploitation of synergies between existing funding such as the European Regional Development Fund, national and regional public funding and private resources, and thus shared investment risks and increased gains.

READ MORE: <http://europa.eu/!mx63fh>



Crop forecasting activities supporting the EU Common Agricultural Policy

We support the EU Common Agricultural Policy by providing scientifically relevant, independent and timely crop yield forecast products for the main crops produced in the EU as well as agro-meteorological data at for EU Member States and neighbouring countries. The information can be assessed through the monthly MARS bulletins and the e-service of the MARS-Explorer.

READ MORE: <http://europa.eu/!cX87Rf>



Anomaly hotspots of Agricultural Production (ASAP)

We provide early warnings of agricultural production anomaly hotspots in support of crisis prevention and response planning in the field of food security. ASAP supports multi-agency early warning initiatives and feeds information to food security assessments, to the IPC (Integrated Food Security Phase Classification) and to the United Nations Food and Agriculture Organization's regional food crisis prevention framework (Cadre Harmonisé), thus covering the basis of the annual Global Report on Food Crises. It also directly feeds into the Group on Earth Observations Global Agricultural Monitoring initiative's (GEOGLAM) Crop Monitor for Early Warning. The system provides information at two levels:

- Monthly identification of agricultural production hotspot countries and summary narratives by JRC experts for agriculture and food security analysts;
- Ten-day automatic warnings about low or delayed vegetation performance at province level plus weather and earth observation vegetation indicators for JRC and external technical experts.

READ MORE: <https://mars.jrc.ec.europa.eu/asap/>



Scientific advice in support of the EU Common Fisheries Policy

We contribute to fish stock assessments, the development of novel fisheries modelling approaches, economic and bio-economic analysis, as well as to the integration of habitat mapping and genetics and genomics into fisheries and aquaculture management and fish product traceability.

READ MORE: <http://europa.eu/!Gb34yR>

Certified Reference Materials (CRMs)

The JRC is one of the major developers and producers of reference materials in the world. We currently provide over 800 reference materials, and distribute around 20 000 units per year to testing laboratories worldwide. Our selections of reference materials are tailored to meet the needs of European and national policy, particularly in emerging areas such as biotechnology and personalised medicine.

Our laboratories and processing facilities for the development and production of reference materials are unique in the world. They provide laboratories with benchmarks to deliver accurate, harmonised and traceable result and therefore help implement EU legislation through accurate and reliable testing.

Certified Reference Materials are available in the following areas:

Clinical analysis http://europa.eu/!Dd44qq	Environmental analysis http://europa.eu/!RJ33Bf	Food and feed analysis http://europa.eu/!gw39hb
GMO analysis http://europa.eu/!NW73pG	Industrial materials http://europa.eu/!rr37jB	Microbiology http://europa.eu/!ht34wY
Nuclear safeguards, safety and security http://europa.eu/!cj44YQ	Nuclear reference data, materials and measurements http://europa.eu/!xm69QY	

Access to scientific infrastructure and data

Scientific Infrastructure

We host 56 world-class reputation physical research infrastructures that carry out experimental work in the nuclear and non-nuclear areas. We offer access to research facilities within various forms of collaboration and actions, including indirect actions funded by the Commission's Directorate-General for Research and Innovation through its Framework Programmes for research.

In 2017 we launched our new initiative on Open Access to JRC Research Infrastructures. It allows the research community, public authorities and industry in European countries, Candidate Countries and Countries Associated to Horizon 2020 to make use, under certain conditions, of our unique assets. Scientists have the opportunity to work in the fields of nuclear safety and security, chemistry, biosciences/ life sciences, physical sciences, ICT and foresight.

Offering access to visiting researchers is part of JRC's strategy to enhance dissemination of scientific knowledge, boost competitiveness, bridge the gap between research and industry and provide training and capacity building. To ensure transparency and fairness, and to address different research and industrial requirements, we offer two different access modes: relevance- and market-driven.

Relevance-driven access is mainly granted to universities and research institutions, as well as to SMEs, possibly in association with industry and private organisations, in areas relevant to JRC's strategic priorities and of importance for European standardisation, integration and cohesion, sustainable growth and competitiveness. Access is based on a peer-review selection process following a call for proposals. Projects accessing JRC facilities under the relevance-driven mode are charged the additional costs associated to such access; nuclear research infrastructures may grant access free of charge.

Market-driven access is granted upon payment of a fee covering the full access costs of the JRC, and it is mainly targeted at industry. Projects are selected by placing emphasis on strategic importance at EU level and on the uniqueness of the JRC facilities in providing access.

Through public calls in 2017 and 2018, we have offered access on a pilot basis to the following laboratories:

In the non-nuclear area:

- ▶ Nanobiotechnology laboratory – Ispira
- ▶ European Laboratory for Structural Assessment (ELSA) – Ispira
 - Reaction Wall
 - Hopkinson Bar Facility

In the nuclear area:

- ▶ European research infrastructure for nuclear reaction, radioactivity, radiation and technology studies in science and applications (EUFRAT) – Geel
 - Neutron time-of-flight facility for high resolution measurements (GELINA)
 - Underground laboratory for ultra-low level gamma-ray spectrometry (HADES)
 - Tandem accelerator based fast neutron source (MONNET)
 - Radionuclide Metrology laboratories (RADMET)
- ▶ Actinide User Laboratory (ActUsLab) – Karlsruhe
 - Properties of Actinide Materials under Extreme Conditions (PAMEC)
 - Fuels and Materials Research (FMR)

Open access will be gradually made available to our other laboratories, so that interested parties may apply.

READ MORE:

<https://ec.europa.eu/jrc/en/research-facility/open-access>

Moreover, the JRC Data Policy promotes free, full, open and timely access to JRC research data. Better access to scientific information helps boost the benefits of public investments in research to eventually generate growth. Sharing of research results accelerates scientific discovery, enables new forms of data-intensive research and allows such findings to be systematically taken up by European business and industry.

The JRC Data Catalogue comprises almost 500 databases covering 14 catalogues, facilitating access to useful databases in a broad range of policy areas. Its content is continuously updated.

READ MORE:

<http://europa.eu/!XX48FQ>

<https://data.jrc.ec.europa.eu>

Capacity building

We are committed to the development and improvement of scientific and technical competence in policy relevant fields. Through our education and training activities, we engage in an open dialogue with stakeholders at European, national and local level to identify, on the one hand, what their skills deficits and needs are, and on the other, which of these gaps can best be filled drawing on the JRC's strengths.

In practice, we organise short online and on-site courses covering a wide range of science-policy areas. We are also launching on-the-job trainings, which notably include a new Collaborative Doctoral Partnership programme.

Support to innovative policymaking

The EU Policy Lab is a collaborative and experimental space for innovative policymaking. By accessing diverse areas of knowledge, we strive to co-create, test and prototype ideas to address complex social problems and to enable collective change. The Lab invites policymakers to explore scenarios, connect issues and find solutions for better policies, acting as a facilitator and providing a safe space for open interactions. It delivers insights and works side by side with the services and agencies of the European Institutions, international bodies, public organisations, universities and research centres. The Lab's main fields of practice are foresight, behavioural insights and design thinking. The lab setting facilitates collaboration between policymakers and society.

READ MORE: <https://blogs.ec.europa.eu/eupolicylab/>

Science to policy courses and on-the-job training

We organise and deliver 1-5-day collective on-line and on-site courses. These courses give participants strong insight into the science-policy interface. In particular they provide up-to-date scientific knowledge, strong links with European policy priorities, and cross fertilization with international and multi-stakeholders. They focus on the competences needed to promote and facilitate the uptake of science and science-based evidence into policy.

On-the-job-training are individual training initiatives aimed at transferring knowledge to individuals to support their educational or professional development. We deliver these on JRC premises in the context of previously established legal frameworks applicable to non-permanent staff.

Collaborative Doctoral Partnerships

We develop and implement with higher education institutions co-designed and co-delivered doctoral projects through a Europe-wide open call for expression of interest with a strong science-for-policy and cross-disciplinary focus. We train a new generation of doctoral graduates in science and technology able to understand the research needs at different stages of the policy cycle, capable of providing scientific support to policy and of using transferable skills in science communication and knowledge management.

READ MORE:
<http://europa.eu/!Tu68Ft>

Research fellows

We provide dynamic on-the-job training and mobility programmes which promote consolidation and expansion of science and technology, and innovation and competitiveness through research and post-doctoral fellowships.

Trainees

We organise on-the-job 3-6-month training programmes in JRC premises to allow young graduates to improve skills and competences necessary for the successful development, implementation and evaluation of EU policies.

Your next steps

The handbook you hold in your hands demonstrates our intention to open up the Joint Research Centre's (JRC) science-for-policy capabilities to help national governments and institutions achieve their goals on a sound evidence basis.

Gradually granting access to the JRC's services, databases and research infrastructure to the EU Member States and Associated Countries to Horizon 2020 will also improve our cooperation and offer added value to national science infrastructures and policy makers.

We hope you find this publication useful and encourage you to use it as a starting point to work with us, whether on services outlined here or other science-for-policy needs you may have in the areas we cover.

Most of the services we offer are readily accessible and free of charge. More tailored assistance is also available but may imply additional costs.

We invite you to contact us today to explore where and how we can best add value to your work. Contact Ms Emanuela Bellan, Head of Unit - Interinstitutional, International Relations and Outreach, @



JRC-MEMBER-STATES@ec.europa.eu

Further to the direct support highlighted in this handbook, we also assist Member State governments through the EU Structural Reform Support Service (SRSS).

The SRSS is the Commission's main tool to support Member States in key areas of reform needs, such as the modernisation of public administration, the business environment and the labour market and how to use EU funds that are available for such purposes more efficiently and effectively.

The Service, which is demand-driven, manages a dedicated support programme — the Structural Reform Support Programme — with a budget of €142.8 million over the years 2017-2020.

Eligible actions include workshops, expert advice, working visits, training, data collection, research, methodology development, IT capacity building, studies, evaluations and awareness-raising campaigns, systems and tools.

For SRSS-specific information, we invite you to contact our colleagues @



SRSS@ec.europa.eu

► You may also be interested in the following documents:



JRC Strategy 2030:
<http://europa.eu/!nq64YV>



JRC Annual Report 2018:
<https://ec.europa.eu/jrc/ar2018>



EC Knowledge for Policy:
<https://ec.europa.eu/knowledge4policy/>



SRSS website:
<http://europa.eu/!hp49RC>

If you would like to learn more about the activities of the JRC, please contact:

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Email: <https://ec.europa.eu/jrc/en/contact/form>

A great deal of additional information on the European Union is available on the internet. It can be accessed through the Europa server (<http://europa.eu>)

JRC Services. A Handbook for national, regional and local authorities on why and how to engage with the European Commission's science and knowledge service

Abstract

The handbook provides a broad overview of the Joint Research Centre's (JRC) science-for-policy capabilities to help national governments and institutions achieve their goals on a sound evidence basis. Services are presented both in a thematic section covering different policy areas, and in a horizontal section covering more generic offering such as access to data and infrastructure, education and training or certified reference materials. The handbook is primarily directed at government personnel in the EU Member States and Associated Countries to Horizon 2020, but can also be of interest to national and regional science organisations, academics and policy makers.

Manuscript completed in December 2018

The following report is a re-edition of JRC Services. A Handbook for national, regional and local authorities on why and how to engage with the European Commission's science and knowledge service. Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-98386-3 doi:10.2760/688566, JRC114261

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EU law and related documents

For access to legal information from the EU, including all EU law since 1952 in all the official language versions, go to EUR-Lex at: <http://eur-lex.europa.eu>

Open data from the EU

The EU Open Data Portal (<http://data.europa.eu/euodp/en>) provides access to datasets from the EU. Data can be downloaded and reused for free, for both commercial and non-commercial purposes.

The European Commission's science and knowledge service

Joint Research Centre

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.



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